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3.2.98

Dear Katinka,

I enclose the second referee's report which I have just picked up from Wolfson (I have e-mailed Van der Merwe to send any further reports to me in London).

I think the second referee is probably right. Would you like to draft a response, which might include the following points, or, of course, others you think of yourself.

- ① We thought it appropriate to give a complete mathematical account of a simple model of the spin-echo experiment, so as bring out the conceptual issues in the clearest possible way. As far as we are aware this model has not been treated elsewhere in the physics literature in such explicit detail.

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② We never claim that it is a virtue of the model that it is a mixing system and has no stronger ergodic properties. Remember we are defending interventionism in this paper, which makes no reference to ergodic theorems, and may be expected to produce much more ^{relaxation} ~~realistic~~ times to true equilibrium even for mixing systems.

(Kobayashi, you might incorporate a brief reference to Blatt on this issue at the end of para 2 on p. 17 of the paper)

In general we reject ergodic approaches, since they do not appear to be relevant for realistic systems (cf KAM theorems, etc)

(Kobayashi, you might say something on this later, very briefly, near the beginning of Section 5, where we are introducing the interventionist approach)

③ We believe that statistical mechanics is concerned with explaining true equilibrium, not quasi-equilibrium, as the appropriate analogue for thermodynamic equilibrium. Otherwise the spin-echo experiments could be

regarded

has exhibiting anti-thermodynamic behaviour, which we do not believe to be the case.

(4) The distinction between a 'small' system and a 'large' environment seems to us a perfectly intelligible and objective one, and is quite unlike the coarse-graining appeal to limitations of observation.

(5) Our reference to those authors who claim an increase for the entropy of the whole universe, is intended merely to say how they yet their results, not at all to say we agree with them!

(6) We are very grateful for the Prigogine reference which we were not aware of.

(Kubitska, could you check the reference, and incorporate a brief comment in the paper)

Let me have a draft of our reply, before e-mailing it to Van der Horst. I very much hope he will now accept it for publication!

With best wishes

Michael